

Appl. No. 10/605,680
Amdt. dated May 07, 2007
Reply to Office action of February 12, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 Listing of Claims

Claim 1 (currently amended): An optical disc recording apparatus comprising:

- a laser diode driven according to a write strategy generator to generate a multi-pulse
light pulse having a fixed-duty ratio with two power levels during APC mode;
- 10 a photodiode for generating output voltage according to a sensed power of the light
pulse;
- a signal processor for averaging the generated output voltage;
- at least one sample and hold circuit coupled to the signal processor for sampling and
holding the average generated output voltage according to a sample and hold
15 signal; and
- an Endec controller, coupled to the write strategy generator, for generating an APC
mode signal and a predefined NRZI pattern having a run length selected
according to a relationship between recording speed and a bandwidth of the
photodiode;
- 20 wherein the power of the laser diode is controlled according to held average
generated output voltage occurring during the APC mode.

Claim 2 (original) The optical disc recording apparatus of claim 1 wherein the signal
processor for averaging the generated output voltage is a low pass filter.

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Claim 3 (previously presented): The optical disc recording apparatus of claim 1 further
comprising a sample and hold signal generator connected to the Endec controller for
generating the sample and hold signal when the average generated output voltage

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has substantially stabilized.

5 Claim 4 (previously presented): The optical disc recording apparatus of claim 3 wherein the at least one sample and hold circuit is connected to the low-pass filter and to the sample and hold signal generator for sampling and holding the average generated output voltage according to the sample and hold signal.

10 Claim 5 (original): The optical disc recording apparatus of claim 4 wherein the average generated output voltage held by the sample and hold circuit is multiplied by a predetermined coefficient to control the power of the laser diode.

Claim 6 (original): The optical disc recording apparatus of claim 5 wherein the predetermined coefficient is equal to the inverse of the fixed-duty ratio.

15 Claim 7 (currently amended): The optical disc recording apparatus of claim 1 wherein ~~the fixed-duty ratio is less than one wherein the selected run length is longer when the photodiode has a relatively slower response than when the photodiode has a relatively faster response.~~

20 Claim 8 (original): The optical disc recording apparatus of claim 1 wherein the Endec controller initiates the APC mode exclusively within predefined APC areas of the optical disc.

25 Claim 9 (original): The optical disc recording apparatus of claim 1 wherein the laser diode utilizes a Blu-ray, Rewritable standard.

Claim 10 (currently amended): A method for controlling laser power in an optical disc recording apparatus, the optical disc recording apparatus comprising a laser diode, a

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photodiode, and an Endec controller, the method comprising:
initiating an APC mode utilizing the Endec controller;
generating a multi-pulse light pulse having a specific pattern having a run length
selected according to the relative relationship between recording speed and
5 response of the photodiode, a predetermined fixed-duty ratio, and two power
levels with the laser diode during the APC mode;
generating photodiode output voltage according to the sensed power of the
generated multi-pulse light pulse during the APC mode;
substantially averaging the photodiode output voltage utilizing a signal processor;
10 and
utilizing the substantially averaged photodiode output voltage to control power of
the laser diode.

Claim 11 (currently amended): The method of claim 10 wherein the predetermined
15 fixed-duty ratio is less than one and the selected run length is longer when the
photodiode has a relatively slower response than when the photodiode has a
relatively faster response.

Claim 12 (original): The method of claim 11 wherein the substantially averaged
20 photodiode output voltage multiplied by the inverse of the fixed duty ratio is
compared to a target power for controlling the power of the laser diode.

Claim 13 (original): The method of claim 10 wherein the optical disc recording apparatus
25 further comprises a write strategy generator connected to the Endec controller for
causing the laser diode to generate the multi-pulse light pulse during the APC mode.

Claim 14 (original): The method of claim 10 wherein the generated multi-pulse light
pulse is a first multi-pulse light pulse utilized to measure write power or a second

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multi-pulse light pulse utilized to measure erase power.

Claim 15 (original): The method of claim 10 wherein the Endec controller initiates the APC mode exclusively within a predefined APC area of the optical disc.

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Claim 16 (original): The method of claim 10 wherein the optical disc recording apparatus utilizes a Blu-ray Disc, Rewritable standard.

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Claim 17 (original): The method of claim 10 wherein the signal processor for averaging the photodiode output voltage is a low pass filter.

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Claim 18 (currently amended): A method for controlling laser power in a Blu-ray optical disc recording apparatus when in APC power control mode, the Blu-ray optical disc recording apparatus comprising a laser diode for generating multi-pulse light pulses and a photodiode outputting a measured power of the light pulses, the method comprising:

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controlling an NRZI pattern encoder to generate a predetermined power control pattern having a run length selected according to the relative relationship between recording speed and response of the photodiode;

controlling a write strategy generator to generate write strategy to a laser diode driver such that the laser diode outputs multi-pulses having a fixed-duty ratio with two power levels;

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sampling and holding an average output of the measured power of the light pulses, the average output of the measured power obtained utilizing a signal processor;

and
controlling the laser diode power level according to predetermined present levels and the held average output of the measured power of the light pulses.

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5 Claim 19 (currently amended): The method of claim 18 wherein the fixed-duty ratio is less than 1, the selected run length is longer when the photodiode has a relatively slower response than when the photodiode has a relatively faster response, and the selected run length is not constrained to the maximum run length permitted under the Blu-ray specification.

Claim 20 (original): The method of claim 19 wherein the signal processor for averaging the output of the measured power of the light pulses is a low pass filter.

10 Claim 21 (original): The method of claim 19 wherein the laser diode power level is controlled according to the predetermined present levels and the held average output of the measured power of the light pulses multiplied by the inverse of the fixed-duty ratio.